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MORRISON & FOERSTER LLP
755 PAGE MILL RD
PALO ALTO, CA 94304-1018

EXAMINER	
LEUNG, JENNIFER A	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/553,990	XU ET AL.	
	Examiner	Art Unit	
	JENNIFER A. LEUNG	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 April 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,6-11,14-27,30-35,38-40 and 49-58* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6-11,14-27,30-35,38-40 and 49-58* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed on April 1, 2008 has been considered. Claims 4, 5, 12, 13, 28, 29, 36, 37 and 41-48 are cancelled. Claims 1-3, 6-11, 14-27, 30-35, 38-40 and 49-58 are under consideration.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1-3, 6, 7, 9-11, 14, 15, 17-23, 25-27, 30, 31, 33-35, 38, 39, 49-51 and 54-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kmecak et al. (EP 0 171 460) in view of Williams (US 4,422,925).

Regarding claims 1, 17, 20, 21 and 25, Kmecak et al. (see FIG. 8; generally, page 38, line 13 to page 41, line 20) discloses a riser reactor and a corresponding process of conducting a hydrocarbon cracking reaction in the riser reactor, wherein the riser reactor (i.e., including

portions **1** and **2**), having a riser reactor height and a reactor bottom, comprises, in order from the reactor bottom,

a) a prelift zone (i.e., the restricted diameter portion of the riser **1**, located between the lift gas inlet conduit **4** and the charge oil inlet conduit **5**) having a prelift zone diameter and a prelift zone height and containing catalyst cracking catalyst (i.e., a cracking catalyst, introduced in regenerated form via conduit **3**; page 43, lines 7-26; also, page 14, line 3 to page 17, line 23), the prelift zone being adapted to lift the catalyst to a first reaction zone (i.e., located immediately downstream from inlet **5**) without cracking hydrocarbons in that prelift zone (i.e., the lift gas to the inlet conduit **4** for contacting the regenerated catalyst is a dry hydrogen containing gas, optionally supplemented with steam and/or water, and most preferably containing about 0-6% C3-plus hydrocarbons. Such contact is conducted prior to contacting the regenerated catalyst with heavy oil feed supplied via conduit **5** to be cracked. See page 28, lines 9-25; page 44, line 12 to page 46, line 2);

b) the first reaction zone (i.e., the restricted diameter portion of the riser **1**, located between the charge oil inlet conduit **5** and the frusto-conical transition section to portion **2**, not labeled) having a constant first reaction zone diameter and a first reaction zone height, the first reaction zone containing catalytic cracking catalyst lifted from the prelift zone and reacting a hydrocarbon (i.e., received from the charge oil inlet **5**) in the first reaction zone; and

c) a second reaction zone (i.e., the expanded or larger diameter portion of the riser **2**) having a second reaction zone diameter that is larger than the first reaction zone diameter and containing catalytic cracking catalyst and reacted hydrocarbons from the first reaction zone.

The prelift zone (i.e., riser **1**, between inlets **4** and **5**) and first reaction zone (i.e., riser **1**,

between inlet **5** and the transition) are defined by the same riser reactor portion **1**, and therefore, the ratio of the first reaction zone diameter to the prelift zone diameter is approximately 1:1.

Additionally, Kmecak discloses that the diameter of the second reaction zone **2** is expanded or larger than the diameter of the first reaction zone **1** (see FIG. 8; also, see page 27, lines 4-15; page 40, lines 3-8). Kmecak, however, does not state a specific diameter ratio for the second reaction zone **2** diameter to the first reaction zone **1** diameter.

Also, from FIG. 8, it appears that the height of the first reaction zone **1**, between inlet **5** and the transition, is about 30% the height of the riser reactor, and the height of second reaction zone **2** is about 50% of the height of the riser reactor. Kmecak et al., however, does not state that FIG. 8 is to scale, and does not indicate a specific height of the first reaction zone or a specific height of the second reaction zone **2**, relative to the height of the riser.

In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to select the recited dimensions for each of the prelift zone, the first reaction zone and the second reaction zone in the riser reactor of Kmecak et al., on the basis of suitability for the intended use, because changes in size merely involves routine skill in the art, *In re Rose*, 220 F.2d 459, 463, 105 USPQ 237, 240 (CCPA 1955). Additionally, the precise dimensions of the respective zones of the riser reactor would have been considered a result effective variable by one having ordinary skill in the art, as evidenced by Williams. In particular, Williams et al. (column 4, lines 21-29) teaches a riser reactor wherein,

> "In each of the reactor sections **9**, **10**, **11** and **12**, reaction conditions suitable for substantially optimum conversion of the various hydrocarbon feedstreams introduced into the successive sections of the riser reactor to the desired products may be obtained by variations in vapor velocity, catalyst loading, feed preheats, and regenerator temperature. *The length and diameter of the various sections of reactor **2** are proportioned to maintain*

a desired reaction time in each section."

Accordingly, one having ordinary skill in the art would have routinely optimized the length and diameter of the various zones of the riser in the apparatus and process of Kmecak et al. in order to obtain the desired reaction conditions within each zone for achieving an optimum conversion of a specified hydrocarbon feed to the desired cracked products, *In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980), and where the general conditions of a claim are disclosed in the prior art, discovering optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding claims 2, 18 and 26, Kmecak et al discloses the riser reactor may comprise a vertical length of about 49 meters, or about 160 feet (page 49, lines 7-23). Additionally, Kmecak et al. discloses, "The riser reactor may be substantially any desired vertical length which will be compatible with the adjacent catalyst regeneration apparatus…" (page 41, lines 15-20).

Regarding claims 3, 19 and 27, in FIG. 8, it appears that the prelift zone **1** height, between inlet conduits **4** and **5**, is about 10% of the height of the riser reactor. Kmecak, however, does not state that the figures is to scale, and does not indicate a specific height of the prelift zone relative to the height of the riser. In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to select appropriate dimensions for the prelift zone in the riser reactor of Kmecak et al., on the basis of suitability for the intended use and absent showing any unexpected results thereof, because the precise dimensions would have been considered result effective variables by one having ordinary skill in the art, as evidenced by Williams et al (see comments above). Accordingly, one having ordinary skill in the art would have routinely optimized the diameter and height of the prelift zone relative to the

dimensions of the riser reactor in the apparatus and process of Kmecak et al. in order to obtain the desired reaction conditions and reaction time within the system for achieving an optimum conversion of a specified hydrocarbon feedstream, and where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

Regarding claims 6, 22 and 30, Kmecak et al. discloses an outlet zone having a height of 0% of the riser reactor height. Thus, a specific diameter for the outlet zone is not applicable.

Regarding claims 7, 23 and 31, Kmecak et al. further discloses, in FIG. 8, a first junction section (i.e., the frusto-conical transition zone, not labeled) between the first reaction zone (i.e., the riser **1** portion, above inlet **5**) and the second reaction zone (i.e., riser **2** portion), wherein the first junction section forms a circular truncated cone shape. Kmecak, however, does not specifically state that the first junction section has a "vertical section vertex angle" in the range of about 30° to 80° within the specification. In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to select an appropriate vertex angle for the first junction section in the apparatus and process of Kmecak et al., on the basis of suitability for the intended use and absent showing any unexpected results thereof, because the precise angle would have been considered result effective variable by one having ordinary skill in the art. Accordingly, one having ordinary skill in the art would have routinely optimized the vertex angle of the first junction section relative to the dimensions of the first and second reaction zones in the apparatus and process of Kmecak et al., in order to obtain the desired reaction conditions and reaction time within the system for achieving substantially optimum conversion of a specified hydrocarbon feedstream, and where the general conditions of a claim

are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

Regarding claims 9, 14, 33 and 38, the same comments with respect to Kmecak et al. and Williams et al. apply. Kmecak et al. further discloses an outlet zone having a height of 0% of the riser reactor height. Thus, a specific diameter for the outlet zone is not applicable. Furthermore, the first reaction zone of Kmecak et al. will be inherently capable of being configured so that a hydrocarbon cracking reaction takes place at a higher reaction temperature, higher ratio of catalyst to oil, and shorter reaction time than, respectively, a reaction temperature, ratio of catalyst to oil, and a reaction time of the second reaction zone, by virtue of the placement of the feedstock inlet 5, catalyst inlet **3**, the relative reaction zone heights, and enlarged second reaction zone **2** diameter with respect to the first reaction zone **1** diameter (see FIG. 8).

Regarding claims 10 and 34, the same comments with respect to Kmecak et al. apply. (see comments made regarding claims 2, 18 and 26 above).

Regarding claims 11 and 35, the same comments with respect to Kmecak et al. and Williams et al. apply. (see comments made regarding claims 3, 19 and 27 above).

Regarding claims 15 and 39, the same comments with respect to Kmecak et al. apply. (see comments made regarding claims 7, 23 and 31 above)

Regarding claims 49-51, 56 and 57, Kmecak et al. further discloses a conduit (i.e., inlet **7** or **8**; FIG. 8) adapted to supply a quenching medium or a reactable feedstock (i.e., residual oil feed via inlet 7; steam and/or water introduced as diluent via inlet **8**; page 40, line 1 to page 41, line 6) between the first reaction zone (i.e., the riser **1** portion, between inlet **5** and the transition) and the second reaction zone (i.e., the riser **2** portion). The quenching medium inlet inherently

functions as a heat exchanger in the second reaction zone **2**, for cooling at least a portion of hydrocarbon and catalyst passing from the first zone to the second zone.

Regarding claim 54, Kmecak et al. further discloses a conjunct zone (i.e., the frusto-conical transition zone, not labeled, see FIG. 8) between the first reaction zone (i.e., the riser **1** portion, above inlet **5**) and the second reaction zone (i.e., riser **2** portion).

Regarding claim 55, Kmecak et al. further discloses a conduit (i.e., inlet **9** or **10**; FIG. 8). adapted to introduce quenching medium (i.e., residual oil feed via inlet **9**; steam and/or water introduced as diluent via inlet **10**; page 40, line 1 to page 41, line 6) between the second reaction zone **2** and the outlet zone.

3. Claims 8, 16, 24, 32 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kmecak et al. (EP 0 171 460) in view of Williams (US 4,422,925), as applied to claims 1, 9, 17, 25 and 33 above, and further in view of Watts (US 2,377,657).

Kmecak et al. is silent as to the riser reactor being configured with an outlet zone and a second junction section located between the second reaction zone **2** and the outlet zone, wherein the second junction section has a circular truncated cone shape. Watts (FIG. 1) teaches a riser reactor **11** comprising an outlet zone (i.e., the upper narrowed portion of reactor **11**) and a conjunct section (i.e., labeled as false head **16'**) located between the outlet zone and a reaction zone, wherein the outlet zone has a circular truncated cone shape (page 2, column 2, lines 49-66). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the riser reactor of Kmecak et al. to comprise an outlet zone and second junction zone, because, "When the diameter of the reactor is narrowed at its upper end and a false head **16'** is adjustably supported therein, the effective volume of the catalyst chamber, i.e., the dense phase

catalyst level therein may be easily controlled," as taught by Watts. Although the collective teachings of Kmecak, Williams and Watts are silent as to the second junction section having a vertical section vertex angle with respect to the reactor axis in the range of about 45 to 80 degrees, it would have been obvious for one of ordinary skill in the art at the time the invention was made to select an appropriate vertex angle for the second junction section in the modified apparatus and process of Kmecak et al., on the basis of suitability for the intended use and absent showing any unexpected results thereof, because the precise angle would have been considered result effective variable by one having ordinary skill in the art. Accordingly, one having ordinary skill in the art would have routinely optimized the vertex angle of the first junction section relative to the dimensions of the first and second reaction zones in the modified apparatus and process of Kmecak et al., in order to obtain the desired reaction conditions and reaction time within the system for achieving substantially optimum conversion of a specified hydrocarbon feedstream, and where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

4. Claims 52, 53 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kmecak et al. (EP 0 171 460) in view of Williams (US 4,422,925), as applied to claim 1 above, and further in view of Carr et al. (US 3,639,228).

Kmecak et al. is silent as to the quench medium comprising catalyst (e.g., regenerated catalyst with a residual carbon content of less than about 0.1 wt%, semi-regenerated catalyst having a residual carbon content of at least 0.1 wt% to about 0.9 wt%, or fresh catalyst). Carr (FIG. 1) teaches the introduction of catalyst at various locations (i.e., at pipes **18**,**20**) downstream from the inlet of the reactor (i.e., adjacent catalyst inlet **16**). The catalyst may comprise

regenerated or semi-regenerated catalyst (i.e., regenerated catalyst with a level of carbon on the regenerated catalyst from about 0.05 to 0.3 wt%; column 5, lines 34-59), as well as fresh catalyst (i.e., via make-up catalyst line **66**). It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide a quenching medium comprising catalyst to the riser reactor in the modified apparatus of Kmecak et al., on the basis of suitability for the intended use thereof, because the downstream injection of additional catalyst increases the yield and selectivity of the cracking reaction within the riser reactor by shifting a major portion of the cracking reaction away from the inlet end of the reactor and thereby distributing the cracking reaction over the length of the riser rather than concentrating the reaction at the inlet of the riser, as taught by Carr et al. (column 1, lines 33-73).

Response to Arguments

5. Applicant's arguments filed on April 1, 2008 have been fully considered but they are not persuasive. The arguments are made in reference to the declaration filed under 37 CFR 1.132 by Dr. Xu Youhao on April 1, 2008. The declaration, however, is insufficient to overcome the rejection of claims 1-3, 6-11, 14-27, 30-40 and 49-58 under 35 U.S.C. 103(a) as set forth in the Office action, because the declaration fails to present sufficient facts and reasoning for overcoming the rejection.

Declaration, Item 6

The declaration argues that "the Examiner in charge of this application drew the conclusion, after manually making a measurement in Figure 8 of EP0171460, that "DR2:DR1 is equal to approximately 3:1". Under heading 6.2, the declaration further argues that Figure 8 of Kmecak "is merely a schematic drawing without the specific dimensions available. Thus, the

value obtained by manual measurement on the basis of the schematic drawing is inaccurate. One skilled in the art would never do this."

However, as indicated in the rejection above, the Examiner understands that the proportions of features in a drawing are not evidence of actual proportions, when drawings are not to scale. Hence, the secondary reference to Williams was relied upon to teach the obviousness in changing the dimensions of length and diameter of a particular reaction zone of a riser reactor, in order to establish the desired reaction conditions, e.g., residence time, within each zone for achieving an optimum conversion of a specified hydrocarbon feedstock into the desired products. The rejection is not based on actual measurements taken from the Figure.

Under headings 6.1 and 6.3, the declaration refers to the calculations presented under Item 8 to show that the ratio of the diameter of the second reaction zone to the diameter of the first reaction zone in the riser of Kmecak cannot lie within the claimed range. The Examiner will address Item 8 below.

Declaration, Item 7.

The declaration presents Examples 1-3 and a Comparative Example, to show that the configuration of a diameter ratio of 4:1, 2:1 or 1.5:1, for the diameter of the second reaction zone relative to the diameter of the first reaction zone, unexpectedly results in an increase in paraffin and isobutane production relative to the smaller diameter ratio of 1.2:1.

However, the Examiner asserts that the results would not have been unexpected to one having ordinary skill in the art.

Gartside, for example, shows that it is conventionally known in the art that shorter residence times and higher temperatures favor olefin production, whereas longer residence times

and lower temperatures favor paraffin production due to an increase in hydrogen transfer activity (see, e.g., column 2, lines 25-35; column 2, line 62 to column 3, line 3; column 13, line 58 to column 15, line 4; Table I; Table IV; column 16, line 59 to column 17, line 7).

As shown in Tables 3 and 4 of the declaration, for a total reaction time of 5.0 seconds (Examples 1, 3 and Comparative Example A), an increase in the diameter ratio from 1.2:1 to 4:1 decreases the reaction time within the higher temperature first reaction zone and increases the reaction time within the lower temperature second reaction zone. The increase in reaction time within the lower temperature second reaction zone, at the larger second reaction zone diameters, will thereby favor greater paraffin production, due to an increase in the level of hydrogen transfer activity, as evidenced by Gartside.

Given this known relationship, it would have been within the skill level of one having ordinary skill in the art to optimize the diameters of the first and second reaction zones in the apparatus of Kmecak, as taught by Williams, in order to establish the desired residence times within each zone for achieving an optimum conversion of a specified hydrocarbon feedstock into the desired distribution of products, such as olefins or paraffins and isobutene, as further evidenced by Gartside.

Declaration, Item 8

The Examiner agrees with the declaration's showing that US 3,246,960 (see right side of FIG. 4) discloses a density of the gas and solids mixture, rather than a density of the gas only, as used in Applicant's calculations (under heading (1)). The Examiner, however, still disagrees with the assertion that $\rho_1 = \rho_2$, where ρ_1 is the gas density at the first reaction zone outlet and ρ_2 is the gas density at the second reaction zone inlet. Although the density values in US 3,246,960

are based on the density of the gas and solids mixture rather than the gas only, the general trend in density would be the same—namely, the gas density at ρ_1 would be greater than at ρ_2. For instance, one having ordinary skill in the art would have expected ρ_1 to be greater than ρ_2 because the gas significantly expands during its passage through the flaring conjunct section, located between the relatively narrow first reaction zone and the enlarged second reaction zone.

Under heading (2), the declaration further states that ρ_1 equals ρ_2, based on the data presented in FIG. 4 of ANNEX B. In FIG. 4, Applicant has inserted vertical dashed-lines at the presumed locations of the first reaction zone outlet and the second reaction zone inlet, in order to show that the density values at the two locations of the riser are equal.

The Examiner, however, asserts that the showing is not persuasive, since the values presented in FIG. 4 are for an isodiametric riser reactor, and *not* a riser reactor having an enlarged second zone diameter. See, e.g., Table 2 on page 1191, wherein the riser diameter is stated to be 1.6 meters.

Under heading (3), the Examiner asserts that the showing by Applicant is not persuasive, since the calculations are based on a riser reactor of constant diameter (e.g., a single diameter value of 1.2 m for the full 49 m length of the riser).

Under heading (4) (from sections 1) through 4)), the declaration provides calculations in an attempt to show that the claimed diameter ratios would not be valid in the enlarged diameter riser reactor of Kmecak. However, the Examiner asserts that Applicant's showing is not persuasive, since the calculations are based upon "measurements" taken from FIG. 8 of Kmecak, which, as stated before, is not to scale. Furthermore, Applicant's calculations are based on the assumption that $\rho_1 = \rho_2$, which has not been sufficiently shown to be valid.

Under heading (4) (Deduction 1), it is unclear as to what Applicant is attempting to prove. The calculations relate only to the first reaction zone, which is an isodiametric reaction zone. It is unclear as to how the calculations pertain to the setting of a diameter ratio of the second reaction zone relative to the first reaction zone within the claimed range.

Under heading (4) (Deduction 2), it is again unclear as to what Applicant is attempting the prove. The calculations presented relate only to the first reaction zone, which is an isodiametric reaction zone. It is unclear as to how the calculations pertain to the setting of a diameter ratio of the second reaction zone relative to the first reaction zone within the claimed range. It is further noted that the data from each of Annexes I, II, III and IV, from in the previous declaration, relate to isodiametric riser reactors, and *not* riser reactors with enlarged second zone diameters.

In view of the foregoing, when all of the evidence is considered, the totality of the rebuttal evidence of nonobviousness fails to outweigh the evidence of obviousness.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

* * *

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER A. LEUNG whose telephone number is (571)272-1449. The examiner can normally be reached on 9:30 am - 5:30 pm Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer A. Leung/
Primary Examiner, Art Unit 1797